lected on a filter, washed moderately with cold water, and dried at a temperature below 212°. When dry, it is reduced to powder, and rubbed up with cold water. Diluted muriatic acid is now added by degrees. The first portions are speedily neutralized, but fresh acid is added until a slight but permanent excess is present. This dissolves both the morphia and narcotine, forming a dark-brown solution, which must be filtered to separate it from some very dark matter which is left undissolved. The filtered solution is now evaporated to nearly the consistence of syrup, and on cooling forms a brown mass of crystals moistened with a very dark liquid. The whole mass is now subjected to strong pressure between folds of bibulous paper, which absorbs the liquid containing the muriate of narcotine and colouring matter, and leaves the muriate of morphia tolerably pure, although still of a brownish colour. A second solution, crystallization, and expression, yields the salt nearly white and free from narcotine. By a third crystallization the muriate of morphia may be obtained in radiated bunches of silky crystals of snowy whiteness. These crystals, when dried by a moderate heat, become quite opaque. They are soluble to almost any extent in boiling water. Their solution has a very bitter taste, and yields, when supersaturated by ammonia, a highly crystalline precipitate of morphia. A similarly pure solution of narcotine in muriatic acid gives a curdy precipitate not at all crystalline."

The quantity of muriate of morphine obtained from opium by the above process, varies according to the quality of the drug. Dr. G. has however got as much as 17.5 per cent. but the quantity usually procured is about 10 per cent.

Dr. Christison and several other practitioners, who have used the muriate of morphia, consider its powers to be equal to that of any other of the preparations of morphia. It is given in solution, five grains of the salt dissolved in one ounce of warm water, of which twenty-five drops, equal to one-fourth of a grain of the salt, is the medium dose.—*Edinburgh Medical and Surgical Journal, April*, 1831.

---

62. *Analysis of Secale Cornutum.*—Mr. R. Battley, of London, has recently analysed both the sound and diseased rye, and his experiments show that starch abounds in the former, but that its presence is scarcely discoverable in the latter; that the unsound rye contains a large proportion of resinous matter, the sound very little, and that the unsound contains a greasy substance, resembling animal matter in taste and smell, not found in the sound rye; and finally, that the unsound rye contains a free acid, none being found in the sound, and that muriatic acid was present. The following was the mode of analysis adopted by him.

1st. *Sound rye perfectly dry and subpulverised.*—No. I. 1000 grains were macerated in cold distilled water: the water immediately became milky, and after some hours yielded of starchy matter 320 grs. The starch was separated, and the supernatant fluid, which was free from acid, having been distilled in a close vessel, the extract weighed 334 grs.

This extract had a peculiar gelatinous quality, and a *slightly* acrid and bitter taste: colour brownish-yellow. The water brought over had the smell of bread, but no other sensible property was detected by the reägents used.

The residuum, when dried, weighed 256 grs. making together, with the two quantities above mentioned, 910 grs. the remaining 90 grs. were lost, nor have I been able, by the utmost vigilance of attention, to account for this, or for a similar loss in every experiment to which the rye, whether in a sound or unsound state, has been submitted.

From the residuum of 256 grs. about 5 grs. of resinous matter were obtained by maceration in alcohol: the alcohol having been slightly tinged with yellow.

No. II.—1000 grains, macerated in proof spirit, yielded of starchy matter 494 grs. and of extract by distillation, 213 grs. the residuum was 250 grs. Loss, 43 grs.

No. III.—1000 grains were macerated in three pints of alcohol, and yielded of extract, of a yellowish appearance, and of a viscid and gelatinous quality, 26 grs.

The spirit was subjected, after distillation, to various reägents, but without the detection of any extraneous matter.

The residuum weighed 960 grs. Loss, 14 grs.

The 960 grs. were macerated in three pints of distilled water, which became slightly milky, *but no deposit of starch took place.* The water was changed so long as the milky appearance continued, but still without any deposit; although, when the tincture of iodine was added, the presence of starch was indicated by a purple colour. The extract obtained by these repeated macerations weighed 160 grs. The residuum weighed 630 grs. Loss, 170 grs.

2d. *Diseased rye also perfectly dry and subpulverized.*—No. I. 1000 grains of the rye were macerated in cold distilled water; the water immediately became mucilaginous, was of a dull cloudy appearance, and a free acid was detected by litmus paper. After thirty-six hours maceration the clear decanted liquor was gently distilled, leaving of extract 178 grs. possessing a sourish animal smell, very peculiar and slightly acrid. The residual matter, when quite dry, weighed 786 grs. Having been lost in the operation 36 grs.

The water thus distilled, when examined by tests, was found to be free from acid. The 786 grains were digested in spirit of wine: the spirit became of a deep purplish-red, and having been gently distilled, left of extract 24 grs. The residual matter, when dried, weighed 748 grs. Loss, 14 grs.

This extract possessed a sourish animal smell, and was slightly acrid. The distilled spirit was free from acidity, and from all sensible properties.

The residuum of 748 grains having been again macerated in water, no sensible property of any kind could be discovered.

No. II. 1000 grains were macerated in proof spirit for thirty-six hours. The spirit became of a deep amber-colour, was somewhat acrid, but free from smell, and the presence of acid was detected. Being distilled off, there remained of deliquescent extract, of a sourish animal smell, 122 grs.

The distilled spirit did not possess any sensible property. The residuum, when dried, weighed 820 grs. having imparted to the spirit during maceration 180 grs. of which were obtained in extract, as above-mentioned, only 122 grs. Loss, 58 grs.

The 820 grains were macerated in distilled water for several hours, imparting to it a dull, cloudy appearance, and showing an acid when tried by the litmus paper. When re-dried, weight 795 grs. having imparted to the water 25 grs. of which 11 grs. only were obtained in extract. Loss, 14 grs.

No. III. 1000 grains were macerated for 36 hours in spirit of wine. The liquid contained acid, and became of a deep amber-colour. It was carefully distilled, leaving of extract, 73 grs. and of greasy matter, of an animal taste and smell, 39 grs. The residuum weighed 840 grs. Loss, 48 grs. The residuum, re-dried, was macerated in distilled water, from 30 to 40 hours. The water was of a dull, cloudy appearance, and an acid was detected by the litmus paper. It was slightly tinged with yellow, and when distilled left of extract, 26 grs. the taste of which was slightly acrid and bitter. The remainder, when dried, weighed 748 grs. having imparted to the water, 92 grs. Loss, 66 grs.

No. IV. 1000 grains were macerated in a pint of distilled water thrice successively. The water of the first and second macerations was acid, which property was evolved immediately upon the application of the water. That of the third maceration was free, or nearly so, from acid. The three fluids were mixed and filtered, and nitrate of silver was added so long as precipitation ensued. The precipitate was collected and dried, and exposed to boiling nitric acid so long as any colour was imparted to it. The remaining matter was of a dull white. The dull white matter was washed with *pure* distilled water so long as acid was imparted to it. The collected mass, when dried, weighed from 7 to 8 grains, which were submitted to the action of the blowpipe, and silver to the amount of 4 grains, was revived. To ascertain the accuracy of the results, the experiment was repeated on a larger scale. One pound of the entire *secale cornutum* was placed under circumstances as described in operating upon 1000 grains, with the additional precaution that the precipitate obtained was dissolved in pure ammonia, filtered, and nitric acid in excess:—a white precipitate instantly ensued. The precipitate was washed in distilled water, and dried. In some hours the matter became of a bluish, or pale slate colour. The flame of the blowpipe was used, and the silver revived, proving the acid in *secale cornutum* to be muriatic.—*London Medical Gazette, Feb.* 1831.

63. *Existence of Copper in Vegetables and Blood.*—M. Sarzeau has confirmed the discovery of Meissner, that copper exists in vegetables, and he has obtained the following results:

	Milligrammes of Copper.
1 Kilogramme of grey quinquine contains,	5
Madder, -	5
Coffee, green Martinique, -	8
Coffee, Bourbon, -	8
Common, - -	8
Wheat, - -	4.7
Farina, - -	0.7
Fæcula of potatoes, -	0.0
Blood, - - -	1.1

M. Sarzeau has found that one milligrame of copper may be detected by the cyano-ferruret of potassium in one kilogramme of water.—*Journal de Pharmacie,* xvi. 505.

64. *Composition of Kermes Mineral.*—The composition of Kermes mineral, as determined by Berzelius and Rose, in accordance with Phillips, has lately been called in question by the French chemists. According to the former, it is exactly the same substance as the common native sulphuret of antimony. Robiquet, Buchner, and Henry, Jr. who found it to contain oxide of antimony, have been joined by Gay-Lussac, who says, (*An. de Chim. xlii. p.* 87,) that when treated with hydrogen gas, it gives off water, and that it is in fact a compound of 1 atom oxide of antimony + 2 sulphuret of antimony. Rose has therefore repeated his experiments, (*Poggendorf's Annalen, xvii.* 324,) with his former results. He prepared his kermes by boiling carbonate of soda on the common sulphuret of antimony, filtering, setting it aside to cool, filtering it again in half an hour to collect the precipitate, drying it well on bibulous paper, and afterwards by a gentle heat till it ceased to lose weight. He found the kermes thus prepared to give no water in a current of hydrogen gas, but to leave 72.71 per cent. of metallic antimony. His former analysis gave 72.32 per cent. and Berzelius found in the common sulphuret 72.77 per cent. The residual liquid, according to Rose, after some hours, becomes troubled, and deposits a white sediment, being oxide of antimony combined with soda. If the kermes be not filtered, soon after its deposition, it will thus be contaminated both with oxide of antimony and with alkali; and this is probably the source of the oxide found by the French chemists. Since no carbonic acid is evolved during the preparation of the kermes by this process, all that takes place is a mere solution of the sulphuret of antimony in the carbonated alkalies.—*Edinburgh Journal of Science.*

65. *Salicine from the Athenian Poplar.*—M. Braconnot having employed the bark of the populus tremula with success in fevers of various kinds, satisfied himself by some experiments that it contained, 1, salicine; 2, corticine; 3, populine; 4, benzoic acid or its elements; 5, a gummy matter; 6, a principle soluble in alcohol, which reduced the salts of gold, silver, and mercury; 7, tartrates of lime and of potassa.

The discovery of salicine in the bark of the aspen induced M. Braconnot to seek for it in other vegetables. His researches have proved it to exist in the